

Although *Delotclis hollandi* seems to have a more western distribution than *D. telegoni*, they both occur in the Columbia River Valley. This could be a meeting-place of two subspecies, but the evidence from the general pattern of distribution and from the degree of difference in morphology of the male genitalia is rather against regarding the two forms as subspecies. No definite conclusion can as yet be made because of the relative paucity of records; this is doubtless due to the species of *Delotclis* being nest-fleas and rather difficult to collect. Both species apparently occur mainly on Microtinae.

CONCERNING SOME HOLARCTIC MIRIDAE

(HEMIPTERA, HETEROPTERA)

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Recently we have investigated several species of Miridae considered to be Holarctic in distribution. In the course of this investigation it has become evident that in several cases populations that have previously been considered conspecific are in reality represented by different species in the Palearctic and Nearctic regions. In the present paper a discussion of the status of several of these forms is undertaken.

1. *Lygus campestris* (Linnaeus) and *L. scutellatus* (Uhler)

The Nearctic species formerly considered conspecific with the Palearctic *campestris* represents a distinct, although closely related species. The parameres of the males present excellent specific differences for the separation of the two species as do the sclerotized rings of the dorsal wall of the bursa copulatrix in the females.

A name is available in the literature for the Nearctic species. In 1877 Uhler described *Orthops scutellatus*³ from specimens taken at Clear Creek Canyon, Colorado. Reuter (1909) synonymized this species with the European *campestris* and this synonymy has been followed by subsequent authors. Dr. Sailer of the U. S. National Museum has kindly informed us that there are at present no specimens of *scutellatus* in the Uhler collection from the type locality. However, there is a specimen in the Uhler collection bearing the locality label "Wyoming July 26-83" and labeled "type." Dr. Sailer informs us that this specimen is identical with material we have used in this study.

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³ *Lygus scutellatus* Lindberg 1934, a homonym, was renamed *L. lindbergi* by Hsiao (1942).

Lygus scutellatus (Uhler) may be distinguished from the Palearctic *Lygus campestris* (L.) by the following characteristics. The right paramere of *scutellatus* (Plate 1, Fig. N) is more slender than that of *campestris*, the hypophysis projects transversely upward and presents two small but distinct points at the apex, one of these being considerably longer than the other and somewhat hook-shaped. In *campestris* (Plate 1, Fig. O) the hypophysis projects vertically and has two slightly curved, horn-shaped points. The left parameres of the two species differ most conspicuously in the shape of the sensory lobes ("Sinneshocker"). In *scutellatus* (Plate 1, Fig. L) this lobe is relatively much smaller and rounded, whereas in *campestris* (Plate 1, Fig. M) it is not only much larger but more angularly produced. In addition the hairs present on the sensory lobe are much larger and more prominent in *campestris*. The hypophysis shows much similarity in the two species, but in *scutellatus* the arm of the hypophysis is thicker and shorter than is the case with *campestris*.

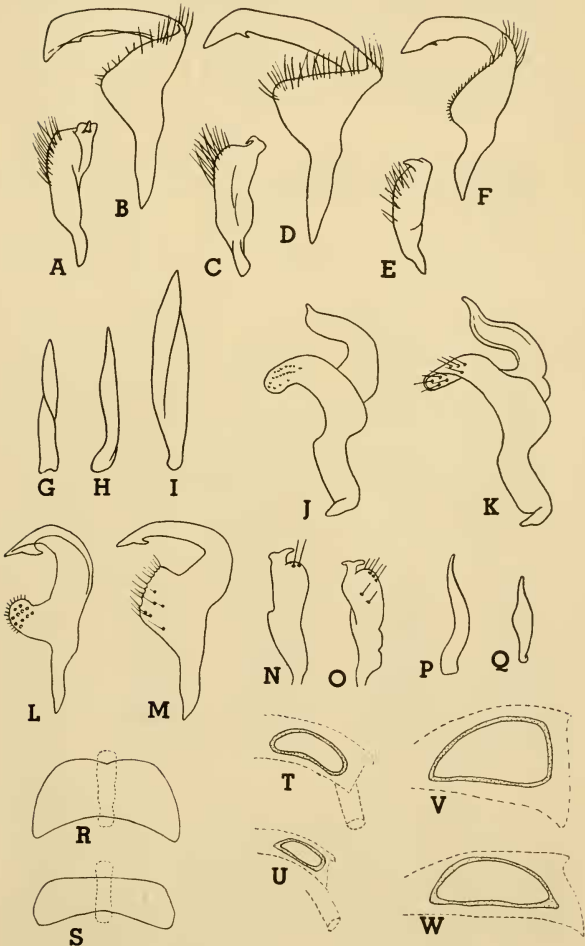
In the females the sclerotized rings of the bursa copulatrix are of a considerably different shape. In *campestris* (Plate 1, Fig. T) the ring is relatively much larger with the median end broadly rounded, whereas in *scutellatus* (Plate 1, Fig. U) the ring is much smaller and mesally bluntly pointed.

Externally the two species are very similar and the differences are of a considerably less definitive nature than are those of the genital structures. Generally *scutellatus* is somewhat longer and more slender, the males averaging 3.4 times, the females 2.8 times as long as the width (measured across the base of the pronotum). *L. campestris* averages 2.75 (males) and 2.6 (females) times as long as width. The vertex of *campestris* averages slightly broader compared to the width of an eye than does *scutellatus*. In *campestris* the vertex averages 1.5 (males), 1.8 (females) times the width of an eye; *scutellatus* averages 1.3 (males), 1.6 (females) vertex to eye width.

Both species are extremely variable in color, grading from nearly uniform yellow to almost black, with many gradations between (Plate 2, Figs. 2L-P). There are, however, certain color characteristics that appear

PLATE I. STRUCTURES OF LYGUS AND MONALOCORIS

Lygus pulverulentus (Uhler): A, right paramere; B, left paramere; G, vesica; R, "C"-structure of bursa copulatrix; V, right ring of bursa copulatrix. *L. reclairei* Wagner: C, right paramere; D, left paramere; H, vesica. *L. rubicundus* (Fallén): E, right paramere; F, left paramere; I, vesica; S, "C"-structure of bursa copulatrix; W, right ring of bursa copulatrix. *Monalocoris americanus* Wagner & Slater: J, left paramere; P, right paramere. *Monalocoris flicis* (L.): K, left paramere; Q, right paramere. *Lygus scutellatus* (Uhler): L, left paramere; N, right paramere; U, right ring of bursa copulatrix. *L. campestris* (L.): M, left paramere; O, right paramere; T, right ring of bursa copulatrix.



to differ in the two species. In *campestris* the head usually remains pale even in rather dark forms, whereas in *scutellatus* the head is often partially darkened even in specimens that are otherwise generally pale. This is particularly true of the males. In specimens of *campestris* that show dark head markings the dark areas usually reach the base of the head, but leave the area adjacent to the eyes pale (Plate 2, Figs. 2G-K), whereas in *scutellatus* the vertex of the head is usually pale while the area adjacent to the eyes is often very extensively darkened (Plate 2, Figs. 1G-K). The cuneus also presents points of difference between the two species. In *scutellatus* (Plate 2, Figs. 1A-C) the cuneus is much longer and more slender than in *campestris*, the darkened area near the apex is more extensive in light specimens than is the case with *campestris* and very often reaches the lateral margin, where it may in dark specimens often be more extensive along this lateral margin than it is along the mesal margin (Plate 2, Fig. 1C). In *campestris* (Plate 2, Figs. 2A-C) the cuneus is relatively shorter and broader, the darkened area less extensive and even in dark specimens this darkened area is never more extensive along the lateral margin than it is along the mesal margin (Plate 2, Fig. 2C). In *campestris* (Plate 2, Figs. 2D-F) the scutellum is relatively shorter and broader and apparently in correlation with this the dark color markings are less attenuated than is the case with *scutellatus* (Plate 2, Figs. 1D-F). It also appears that the dark color markings on the scutellum are of much more common occurrence in *scutellatus* than they are in *campestris*, although insufficient series are available to provide adequate figures. Specimens of *scutellatus* from the western United States are generally darker than are those from the middle western and eastern states and perhaps subsequently it will be possible to ascertain subspecific differences in the populations of this species within the Nearctic region. A series of specimens from Alaska kindly sent for examination by Dr. Sailer all prove to be typical *scutellatus* Uhler.

2. *Lygus (Agnocoris) rubicundus* (Fallén) and *L. (A.) pulverulentus* (Uhler)

Specimens of the subgenus *Agnocoris* from the eastern and midwestern United States that have been considered previously as *L. rubicundus* prove upon examination to be distinct from the European species.

A name is available in the literature for this species. Uhler (1892) described *Hadrodema pulverulenta* from "Utah Lake" and numerous eastern states. The U. S. National Museum collection contains no specimens in the Uhler material from the Utah Lake locality, but does contain specimens from the type series. We therefore designate as lectotype a male bearing 3 labels, the first "Washington, D. C., June 7, 1884," the second indicates the specimen is from the Uhler collection, and a third label in Uhler's handwriting reads "*Hadrodema pulverulenta* Uhler." The specimen does not bear Heidemann's name as collector, but Dr. Sailer informs us that the style of mounting is characteristically Heide-

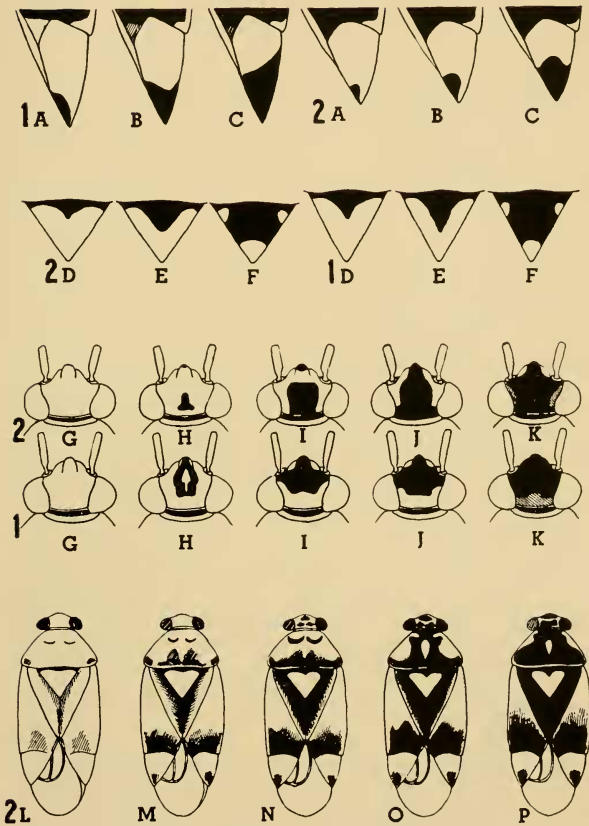


PLATE II. COLOR VARIATION IN SPECIES OF LYGUS

Lygus scutellatus (Uhler): 1A, B, C, dorsal view of right cuneus; 1D, E, F, dorsal view of scutellum, 1G, H, I, J, K, dorsal view of head. *L. campestris* (L.): 2A, B, C, dorsal view of cuneus; 2D, E, F, dorsal view of scutellum; 2G, H, I, J, K, dorsal view of head; 2L, M, N, O, P, dorsal view of insect.

mann's. The lectotype specimen will bear the type number U.S.N.M. no. 61302.

The eastern specimens heretofore considered as *Lygus rubicundus* (Fallén) therefore will take the name *Lygus pulverulentus* (Uhler). The true *rubicundus* may be present in the western United States, where it has been recognized under the varietal name *winnipegensis* Knight.

L. rubicundus and *L. pulverulentus* are readily separable by characters present in both the male and female genitalia. The right paramere offers very good characters to separate the two species, and also serves to separate the closely related European species *Lygus reclairei* Wagner (1949) from the above mentioned species. In *pulverulentus* the right paramere is very broad distally and much more slender toward the base (Plate 1, Fig. A). The hypophysis is small and directed upward at a distinct angle. In *rubicundus* the entire paramere is rather slender, the hypophysis thick, pointed and tooth-shaped (Plate 1, Fig. E). In *reclairei* the paramere is thick throughout its entire length, the hypophysis is produced, hook-shaped, small and directed toward the inner side (Plate 1, Fig. C.). The sclerotized rod of the vesica also shows slight but definite differences as illustrated in Plate 1, Figs. G, H, I.

The left paramere also shows differentiating characters in the three species. In *pulverulentus* (Plate 1, Fig. B) the paramere has a thick, heavy hypophysis, a flat sensory lobe that extends to the right prominently, but less markedly than in *reclairei* (Plate 1, Fig. D), the latter also having a longer and more slender hypophysis. The left paramere of *rubicundus* (Plate 1, Fig. F) is relatively very slender, the sensory lobe being only moderately developed and the hypophysis shorter and more strongly curved.

In the females differences are present in the shape of the sclerotized rings located on the dorsal wall of the bursa copulatrix and in structure "C" of the posterior wall of the bursa. In *pulverulentus* the sclerotized ring is broad, widest near the lateral end and tapering strongly to the mesal end (Plate 1, Fig. V). In *rubicundus* the ring tapers somewhat to each end and is broadest mesad of the center of the ring (Plate 1, Fig. W). The "C" structure of *pulverulentus* (Plate 1, Fig. R) is considerably broader and deeper than is the case with *rubicundus* (Plate 1, Fig. S).

The two species are very similar externally, but some small differences appear to be present in the ratios of several parts. For example, in *pulverulentus* the vertex is as broad as the eye while in *rubicundus* it is 1.15 (male), 1.43 (female), times as broad as is the eye. (In *reclairei* the vertex is 1.31 (male), 1.8 (female) times as broad as the eye. *Pulverulentus* appears to possess longer and more dense pubescence than do either of the European species.

3. *Monalocoris filicis* (Linnaeus) and *M. americanus*, new species.

European and North American specimens of *Monalocoris* that have hitherto been called *Monalocoris filicis* prove upon

examination to represent different species in the two faunal regions. The European species will retain the name *filicis*. The Nearctic species has not been described in the literature and may be called *americanus* n. sp.

The two species are readily separable by characters present in the male parameres. The right paramere of *americanus* (Plate 1, Fig. P) is relatively longer, more slender and evidently curved. In *filicis* the right paramere (Plate 1, Fig. Q) is shorter, thicker, and more nearly straight. The left paramere in *Monalocoris* is bifurcate and thus divided into two arms of nearly equal length. The sensory lobe (left arm) in *filicis* (Plate 1, Fig. K) is relatively slender, and more nearly truncate at the apex than is the case with *americanus* (Plate 1, Fig. J.) The hypophysis (right arm) in *filicis* (Plate 1, Fig. K.) is longer, more strongly curved and drawn out into a longer point than in the Nearctic species.

Externally the two species are very similar although a few dimensional differences may be detected. *Filicis* has a slightly broader head than does *americanus*. In *filicis* the vertex averages 3.5 (males), 3.3 (females), times as broad as the eye while *americanus* has the vertex 2.7 (males), 2.8 (females) times as broad as the eye. Occasional individuals from each continent will approach the average measurements of the other species. The cuneus and membrane in *filicis* is broader and shorter than is the case with *americanus*. In *filicis* the cuneus plus membrane length is .8 the length of the corium, while in *americanus* the length of the cuneus and membrane is .92 that of the corium.

The majority of specimens of *americanus* examined appeared darker in color than the European *filicis*, this color darkening being particularly evident on the head and antennae.

Monalocoris americanus, new species

Male.—Oval-elliptical, surface shining, blackish or blackish-brown; sparsely clothed with soft, light-colored hairs. First and second segments of antennae pale yellow, apex of second, all of third and fourth segments fuscous; length of antennal segments I:II:III:IV: .29 mm., .65 mm., .37 mm., .33 mm., second segment very slightly incrassate toward the apex. Pronotum densely and finely punctate, scutellum and hemelytra obsoletely punctured. Median claval suture twice length of scutellum. Cuneus and membrane more than .9 length of corium, membrane dull greyish brown with a single prominent vein present. Collar and caudo-lateral angles of pronotum, embolium, legs and rostrum light yellow. Rostrum reaching caudad to mesocoxae. Male genital segment short and conical; right paramere (Plate 1, Fig. P) small, slender and sinuated; left paramere (Plate 1, Fig. J) with two arms of nearly equal length, the hypophysis blunt at the apex with a small short point, sensory lobe curved, rounded bluntly at apex, tuberculate; penis very small, vesica with a flat, broad sclerotized staff. Length 2.4 mm.; width of head across eyes .29 mm.; width of eye .08 mm.; length of pronotum .52 mm.; width of pronotum at base .96 mm.; length claval suture .56 mm.; maximum width 1.3 mm.

Types.—Holotype, male, Lake Itasca, Clearwater Co., Minnesota, September 3, 1950 (Jean Laffoon), U.S.N.M. no. 61295.

Paratypes: 29 males, 43 females. MINNESOTA: Lake Itasca, Clearwater Co. (Jean Laffoon). TENNESSEE: Gatlinburg (R. H. Whittaker); Great Smoky Mts. Nat. Pk. (R. R. Dreisbach). VERMONT: Mt. Mansfield (E. A. Chapin). MICHIGAN: Cheboygan Co. (R. R. Dreisbach). MASSACHUSETTS: (C. F. Baker). COLORADO: (C. F. Baker). PENNSYLVANIA: Springbrook (Sailer). MAINE: Tumbledown Mt., Franklin Co. (A. Stone); Mt. Desert (W. L. MeAtee). VIRGINIA: Dead Run, Fairfax Co. (V. A. Roberts). FLORIDA: St. Croix (G. Sanders). WISCONSIN: Camp McCoy (E. Hicks). IOWA: Palisades-Kepler State Park, Linn Co. (Laffoon, Slater, Hicks); Strawberry Point (Harris and Johnston). NEW YORK: McClean; White Face Mountain (H. H. Knight); White Plains (J. R. Torre Bueno). ONTARIO: Muskoka (E. P. Van Duzee); Gull Lake; Parry Sound (H. S. Parish). NOVA SCOTIA: Truro (R. Matheson). ALBERTA: Slave Lake (O. Bryant). Paratypes deposited in the collections of Iowa State College, H. H. Knight, U. S. National Museum, and those of the authors.

In 1881 Reuter described a *Camptobrochis parvulus* from Madeira. China (1938) referred this species to the genus *Monalocoris*. *M. parvulus* (Reut.) has some affinities to the species discussed above, differing from both by its very small eyes and slender antennae. The second antennal segment of the female is 1.3 times as long as the width of head across the eyes, whereas in *M. flicis* and *M. americanus* this ratio is 1.1—1.2. In general shape *parvulus* most closely resembles *americanus*, while the head and antennae are of a still lighter color than are those of the Palearctic species. In *parvulus* the vertex is four times as broad as the eye; the pronotum 2.75 times as broad as long and the surpassing part of the clavus twice as long as the scutellum.

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NEW SPECIES OF DOLICHOPODIDAE IN THE U. S. NATIONAL MUSEUM

(DIPTERA)

BY F. C. HARMSTON, *Salt Lake City, Utah*

This report includes descriptions of thirteen apparently undescribed species of Dolichopodidae which were among material submitted to the writer for identification by Dr. Willis W. Wirth, Division of Insect Identification, U. S. National Museum. All of the specimens discussed herein have been returned to Dr. Wirth, and are deposited in the U. S. National Museum.

Dolichopus hirsutitarsis, new species

Male.—Length, 5 mm.; length of wing, 4.5 mm. Face ochreous yellow, broad on upper portion where its width equals the distance between the tips of third and fourth veins, slightly narrowed on lower portion. Front metallic, green, its reflections violet when viewed obliquely. Palpi dark yellow, the anterior surface with black hairs. Antennae black; first segment yellow on lower half; second segment slightly yellow at tip on lower portion; third segment scarcely longer than wide, obtusely pointed, with a thick, densely pubescent arista which is inserted near the apical fourth of the segment. Postocular cilia white, the black cilia descending to about the middle of the eye.

Dorsum of thorax bright green, metallic, the reflections somewhat of a purplish hue when viewed obliquely; pleurae concolorous with dorsum, subshining, lightly dusted with grayish pollen; the black bristles of the prothorax and metanotum exceptionally large and prominent. Abdomen green, metallic, with bronze and purple reflections, lightly dusted with gray pollen. Hypopygium concolorous with the abdomen, the apical half more blackish, overlaid with whitish dust; lamellae yellow, triangular, with jagged and blackened apical margin, fringed with black bristles.